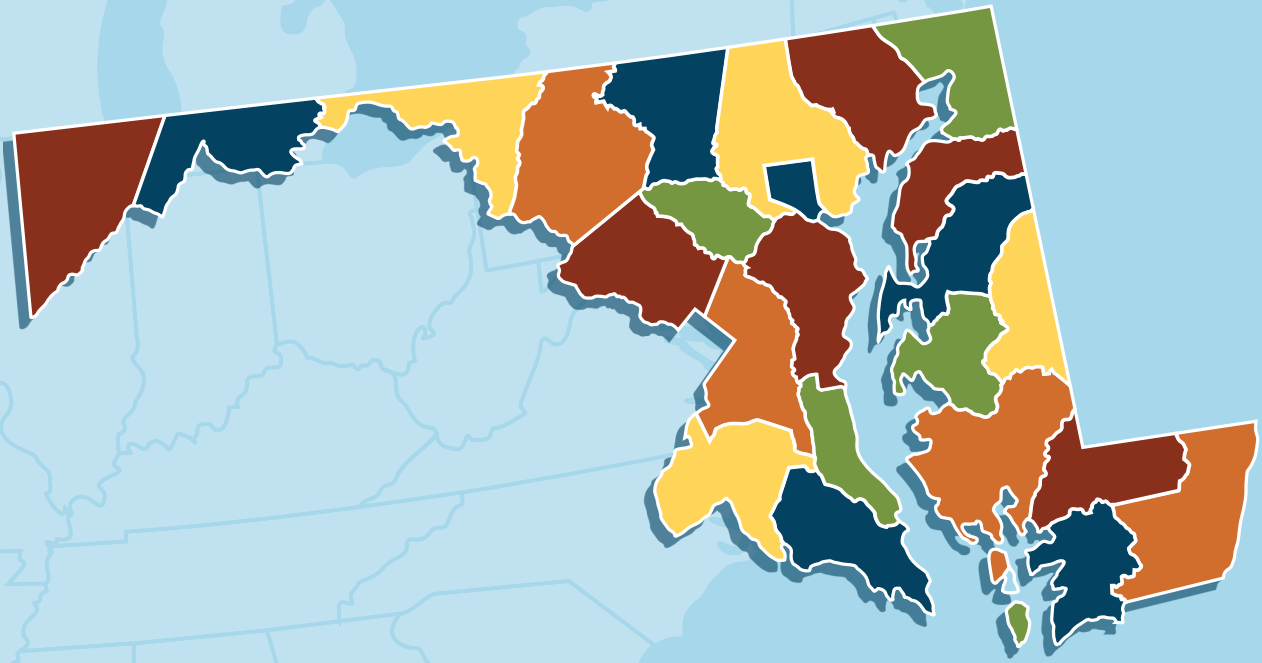
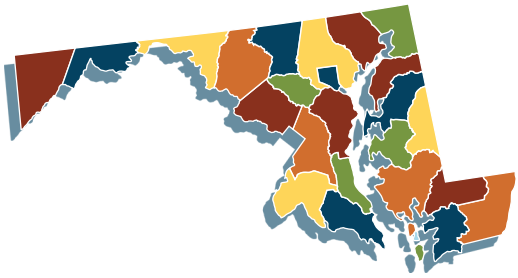


The State of Online Learning in Maryland 2010-11



The State of Online Learning in Maryland

2010-11

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Acknowledgements

This report addresses online learning in Maryland, with a particular focus on Maryland state-level policies and on the practices of the Maryland Virtual School (MVS). While much of the text is specific to Maryland, some is adapted from *A National Primer on K-12 Online Learning*, published in October 2010 by the International Association for K-12 Online Learning, or from The Michigan Online Learning Report, published in January 2008 by the Michigan Virtual University. The National Primer addressed the key issues in online learning with a focus on national policies and built on an earlier report commissioned in California, The State of Online Learning in California: A Look at Current K-12 Policies and Practices. Some national data is from *Keeping Pace with K-12 Online Learning: An Annual review of Policy and Practice*, November, 2010. This report also benefits from countless other researchers and practitioners in online education, as well as extensive interviews with Maryland legislators, educators and policymakers.

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Table of Contents

Preface

Online learning is growing rapidly across the United States, as an ever increasing number of parents, students, and educators become familiar with the benefits of learning unconstrained by time and place. K-12 schools are following the example of many colleges and universities that are incorporating online elements into on-campus programs, as well as providing fully online courses for distance education students. As of fall 2010, students across 48 states plus Washington, D.C. are able to access online courses through state virtual schools, full-time online schools, or district online programs.

Through online learning we can provide greater equity of learning for our students, particularly in making accelerated learning and high-level courses available to students in small districts where the funding will not support a teacher for only a few students. Even within a large system we see disparity based on the size of the school, credentials of the staff, location of the school within a district, and challenges that the student population presents. Nationally, online learning is proving to be a successful strategy in creating greater access to education for all, and many state virtual schools are focused on alleviating inequities in rural or inner-city regions.

Although these successes and opportunities are becoming more common within K-12 education, many educators and policymakers remain unaware of the basics of how online education programs operate, what an online course looks like, the role of the teacher, and most fundamentally, how students can learn online. This report aims to help fill the gaps, and to be a resource for anyone who is new to online learning and wishes to gain quickly a broad understanding of the academics, quality, management and operations, policies, performance, and other key issues in online education.

We have the ability to transform schools through online learning, not on a sporadic basis, but as a consistent component of what represents change in education. We have the option to infuse online learning into schools that are in need of improvement and to help schools offer courses to meet the needs of all students. I hope that this report will convince legislators, educators, and parents to support a statewide virtual school program to help school systems expand high-quality education offerings and to support students in meeting their educational goals.

Nancy S. Grasmick

Nancy S. Grasmick

State Superintendent of Schools

Executive Summary

Online learning is growing rapidly across the United States. At the post-secondary level, many colleges and universities, including University of Maryland University College, University of Maryland Baltimore County, and the Maryland Online consortium, are incorporating online elements into on-campus programs and providing fully online courses for distance education students. In many states, K-12 schools are following the post-secondary example and providing online and blended courses as well. Thirty-nine states have either state virtual schools (31) or other state-led online initiatives (8), with a total of more than 450,000 course enrollments collectively in the 2009-2010 school year. In addition, an estimated 200,000 students are enrolled in full-time online schools in the 27 states that offer these schools.

Many educators in Maryland believe that the state has not yet begun to realize the promise of online and blended learning. Maryland has created a state virtual school through legislation, and several districts operate online programs, but overall the state's experience with online learning has lagged behind other states and behind the vision set forth in the Maryland Education Technology Plan (2007). Of the 31 states that have created state virtual schools and eight additional states with state-led online initiatives, nearly all have more students taking supplemental online classes than Maryland. Online learning has not been as high a priority in Maryland as in some other states, possibly because traditional education programs have been successful. There may be less motivation to improve and be innovative in new instructional models due to this success, compounded by the lack of a sustainable funding model at the state level, placing the burden of funding online courses squarely on schools districts.

To increase online learning opportunities and student outcomes, Maryland should implement several steps:

- Expand the Maryland Virtual School to increase opportunities for supplemental online courses for all students;
- Create a funding model that allows the Maryland Virtual School to grow sustainably over time;
- Fund online courses based on successful course completions, ensuring cost-effectiveness while freeing online schools from seat-time requirements;
- Expand the Maryland Virtual Learning Opportunities professional development program for teachers;
- Continue and expand the Maryland State Department of Education's role in supporting the efforts of school districts to provide online courses through quality assurance and other measures;
- Implement an online learning requirement for all students;
- Work with school districts to provide blended learning and prepare to implement continuous learning during disruptive events.

These suggestions represent a first step for using online and blended learning to transform education in Maryland.

1 Introduction

Online learning is growing rapidly across the United States. At the post-secondary level, many colleges and universities, including University of Maryland University College, University of Maryland Baltimore County, and the Maryland Online consortium, are incorporating online elements into on-campus programs and providing fully online courses for distance education students. In many states, K-12 schools are following the post-secondary example and providing online and blended courses as well. As of fall 2010, 39 states have state virtual schools or other state-sponsored online initiatives, with a total of more than 450,000 course enrollments collectively in the 2009-2010 school year.[1] In addition, an estimated 200,000 students are enrolled in full-time online schools in the 27 states that offer these schools.[2] Notable online schools and programs include:

- The Florida Virtual School (FLVS) served more than 232,000 successful course enrollments in school year 2009-2010. FLVS, which has grown steadily since its inception in 1997, has shown the popularity of online learning when students are given the choice of taking online courses, and has demonstrated the ability of a program to grow rapidly while maintaining high quality.
- The Louisiana Virtual School is working with local schools that lack a qualified algebra teacher by offering an online algebra course that is taken by students sitting in a physical classroom. The students learn from a highly qualified teacher online, and a teacher not certified in mathematics assists in the classroom. This arrangement serves the dual purpose of providing both a highly qualified teacher for students and a mentor to the classroom teacher being trained in algebra.
- Alabama ACCESS provides web-based and video-based courses to more than 31,000 students across Alabama, and works with local schools to provide the technology infrastructure to receive the courses. ACCESS has integrated with the existing statewide student information system as well as ACCESS' learning management system for seamless access to student data from the classroom or online courses.
- The Michigan Virtual School works with districts to help them meet the state requirement that all high schools students have an "online experience" in order to graduate.

[1] A course enrollment is one student taking one semester-long course.

[2] Enrollment numbers, definitions of different program types and state program information are based on *Keeping Pace with K-12 Online Learning: An Annual Review of Policy and Practice (2010)*, published by the Evergreen Education Group, available at http://www.kpk12.com

The number of students taking one or more online courses is growing at around 30% per year,[3] with many individual states and programs showing growth of above 40%.[4] The total number of students across the country taking an online course is estimated to be above one million.[5] Online learning allows students to learn essential 21st century skills, including many highlighted in the Maryland Technology Literacy Standards for Students,[6] by stressing self-directed learning, collaborative communication, time management, and technical literacy in the context of problem solving and global awareness.

Across most states and all grade levels, students are finding increased opportunity, flexibility and convenience through online learning. Teachers are discovering that online instruction offers them more professional flexibility, through adjunct teaching and telecommuting opportunities. Administrators are exploring ways to offer a wider range of courses to students and professional development opportunities to educators.

Although Maryland has created the Maryland Virtual School, many educators believe that the state has not yet begun to realize the promise of online and blended learning. This report explains the background of online learning, explores the online schools and programs being implemented in Maryland and other states, and recommends policy changes to allow more Maryland students to benefit from online learning opportunities and increased equity in Maryland's educational system.

Common misconceptions about online learning

Although online learning is increasingly common and well understood, some misconceptions persist. These include:

MYTH Online learning is just a high-tech version of the old correspondence course.

REALITY Many online courses, including all of those offered by the Maryland Virtual School, are teacher-led, with extensive interaction between teachers and students, and often among students. Online courses frequently include video, audio, animation, simulations and other media elements that provide a very different learning experience from a correspondence course. Online learning also offers immediate access to research sources and supplemental content not available in correspondence courses.

MYTH Online students spend all of their time in front of a computer and are isolated from their peers and short-changed on important socialization skills.

REALITY In Maryland, all online options are supplemental, meaning that the students take only one or two of their courses online, and have most of their courses in a physical school. In other states, students who take all their courses online usually have many activities that are not online, including paper-based homework activities and science labs.

[3] International Association for K-12 Online Learning, *Fast Facts About Online Learning*, retrieved October 18, 2010, www.inacol.org/press/docs/nacol_fast_facts.pdf

[4] *Keeping Pace with K-12 Online Learning: A Review of Policy and Practice (2009)*, Evergreen Education Group, available at http://www.kpk12.com

[5] The Sloan Consortium, *K-12 Online Learning: A 2008 Follow-up of the Survey of U.S. School District Administrators*; retrieved October 18, 2010, www.sloan-c.org/publications/survey/pdf/k-12_online_learning_2008.pdf

[6] Maryland Technology Literacy Standards for Students, retrieved October 2, 2010, http://www.montgomeryschoolsmd.org/departments/techlit/docs/MTLSS%20Complete.pdf

FEATURE

Online learning in Baltimore County Public Schools[7]

Baltimore County Public Schools (BCPS) believes that online courses provide new opportunities in the delivery of instruction for students. All online courses are aligned to state and national standards and provide students the flexibility to work independently and at various times during the school day. BCPS is currently using online courses to expand the range of subjects available to students, to allow students to take a course when there are too few enrollments to justify a face-to-face course in a particular school, to alleviate student scheduling conflicts, and to provide an online experience for students who will be using 21st century technologies throughout their lives.

Online teachers communicate with students using email and online discussion forums, as well as by phone and fax. Each student taking an online course has an on-site mentor who is available as needed to provide support. The mentor works with the online teacher, proctors exams, provides science labs, and offers curricular support. BCPS also has a District Coordinator for Online Learning to help ensure a high-quality online learning experience for students.

During the 2009-10 school year, 27 secondary schools provided 19 online courses for 139 BCPS students. Courses included AP® Art History, AP® Biology, AP® Physics-C, AP® French Language, AP® Environmental Science, and Algebra 2. Four students took Multi-Variable Calculus online from Stanford University's Education Program for Gifted Youth, and 16 middle school students took online Geometry so they could move more quickly to higher-level math courses.

Online learning in the BCPS program has grown from 26 students in the 2004–05 school year to 139 students for 2009–10, with the numbers expected to increase annually. BCPS is working to increase the number of students taking AP® courses, whether online or face-to-face, and expects that this will increase the number of students taking online AP courses. The ability to offer online AP® courses has been a great support to those schools where students would not have been able to take the courses in a physical classroom.

BCPS has established policies and procedures that are strongly supported by district leadership and is building increased involvement on the part of local school counselors and principals. BCPS works with the Maryland Virtual School (MVS) to provide much of the online curriculum available to BCPS students. "The Maryland Virtual School offers local school districts expertise and the technology infrastructure needed to support online student learning," according to Thea Jones, Supervisor of Instructional Technology. "Because most districts do not have the resources to review thoroughly all of the online courses that are available, the MVS reviewing process is invaluable to us."

[7] This BCPS profile is adapted from *From e-Learning to Virtual Learning Environments*, Thea Jones, International Society for Technology in Education, web resources, volume 37, September/October 2009, retrieved November 21, 2010, http://www.iste.org/learn/publications/learning-and-leading/issues/e-Learning_Programs_Come_in_All_Shapes_and_Sizes.aspx

MYTH **Online learning is essentially "teacher-less."**

REALITY Not only are teachers heavily involved in many online courses, online teachers report that they know their students better online than in a face-to-face course.

MYTH **Online courses are easier than face-to-face classes.**

REALITY The level of difficulty of online courses varies, in the same way that the level of difficulty of face-to-face classes varies by course, teacher, and other variables. Many online students report that their online courses are harder than their face-to-face classes. Students in some online programs' Advanced Placement® (AP®) classes have done as well or better than the national average on AP exams, suggesting that these courses are at least as rigorous as their face-to-face counterparts.

MYTH **Students are able to cheat easily in online courses.**

REALITY Most online teachers believe this issue is handled fairly easily through a combination of teaching practice and technology. Maryland Virtual School requires that staff at the local school proctor quizzes and exams. In many cases learning software is used to ensure that a student can't enter an assessment more than once without permission from the teacher. Teachers base student grades on a range of assignments and tests, thus ensuring that students do the work required in order to pass the class.

MYTH **Online learning is only appropriate for high school students.**

REALITY Many state virtual schools offer online courses to middle school students, and some are exploring offering courses to elementary school students. (Florida Virtual School already offers elementary courses, in conjunction with Baltimore-based Connections Academy.)

MYTH **Online learning is only good for highly motivated, highly able students (or conversely, only for dropouts and students in need of remediation).**

REALITY Online programs serve a range of students. Some programs focus on high-achieving students; others focus on at-risk or credit recovery students; and many programs serve many different types of students. State virtual schools in several states have large numbers of students who are recovering credit through online courses.

MYTH **Online learning is much cheaper than face-to-face instruction.**

REALITY Some people expect that because online programs do not require school buildings they will be much less expensive than traditional schools. However, an online school's technological infrastructure is the equivalent of the school's physical facility, and the hardware and software can be expensive. Many online programs, including the Maryland Virtual School, maintain student-teacher ratios similar to the ratios of traditional schools. For these programs, as with physical schools, a major cost is teachers and other personnel, and these costs increase in a linear fashion with the increase in the number of students.

FEATURE

Online learning in Frederick County Public Schools

Online learning in Frederick County Public Schools (FCPS) has grown from a strategy to improve educational alternatives for the Evening High School program to providing a broad range of online learning options from credit recovery to Advanced Placement. Online learning was first used to provide an alternative for at-risk students who were unsuccessful in the traditional school setting. These students use online courses to move through the subject at an individual pace, coming to a set location two nights a week with a qualified teacher to guide the students through the coursework.

The need to support students with a variety of needs prompted the creation of the Frederick County Virtual School, offering Advanced Placement® courses, options for student athletes, and courses with low enrollment that are not economical to offer in the brick-and-mortar school. The overall online program, the Virtual School and Evening High School, generated approximately 400 course enrollments in fall semester 2010.

The two programs are differentiated by the proximity of the teacher in the learning experience. The Evening High School requires students to come to a physical location, although the students work in online courses. In the Virtual School, students attend a face-to-face orientation with their teacher and then are free to work on the course at their own schedule.

"We're not constrained by geography or chronology," notes Buddy Phillips, Teacher Specialist for Instruction–Online Learning. "We do whatever it takes to support the student. One of our students is on the U.S. Junior Olympic team and is taking online courses while training in Lake Placid and even while competing in Russia."

FCPS started the Virtual School using teachers provided by the education vendors that supply the online course content, but now all online instruction is delivered by Frederick County teachers. Teachers are required to go through professional development designed to develop the skills necessary to teach effectively in the online environment.

2. National online learning activity and trends

What we need is a new instructional model, and online learning can provide that unifying element. There is a lack of awareness and understanding of how extensively online learning can be used to address some of our most pressing educational challenges, including accelerated learning and a shortage of highly-qualified, certified teachers.

Delegate Sheila E. Hixson, Chair of the College Success Task Force, P-20 Leadership Council of Maryland

Online learning activity is growing rapidly across the country, with a proliferation of new online schools and consistent growth in existing online schools. In recent years there have been significant increases in the number of online programs, the number of students taking a single online course, and the number of students attending a full-time online school. Although growth has been uneven, primarily due to budget constraints or state policy decisions, the overall trend is towards increasing opportunities for students.

State virtual schools

State virtual schools now exist in 31 states (Figure 1). An additional eight states offer state-led online learning initiatives that provide tools and resources to school districts across their state. Together, the state virtual schools provided roughly 450,000 course enrollments (one student taking one semester-long course) in for-credit courses in school year 2009-10. Many state virtual schools have grown rapidly in the past year, and Vermont, Montana and Alaska opened or created new state virtual schools in fall 2010. Montana Digital Academy has over 2,000 course enrollments for fall 2010, its first semester in operation. Florida Virtual School is by far the largest state virtual school with more than 232,000 course enrollments in 2009-10; North Carolina is the next largest with 73,658 enrollments, and several others have at least 10,000 course enrollments.

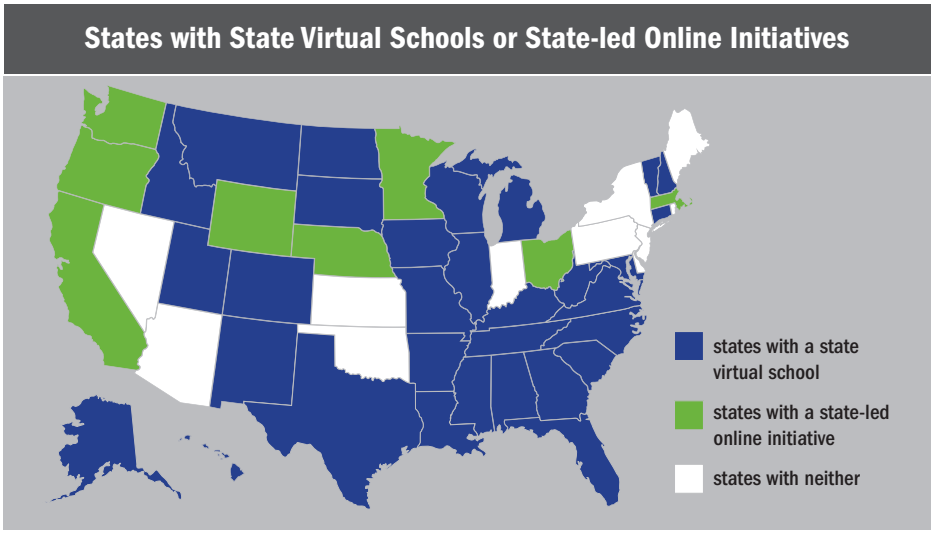

Figure 1: States with state virtual schools and other state-led online initiatives

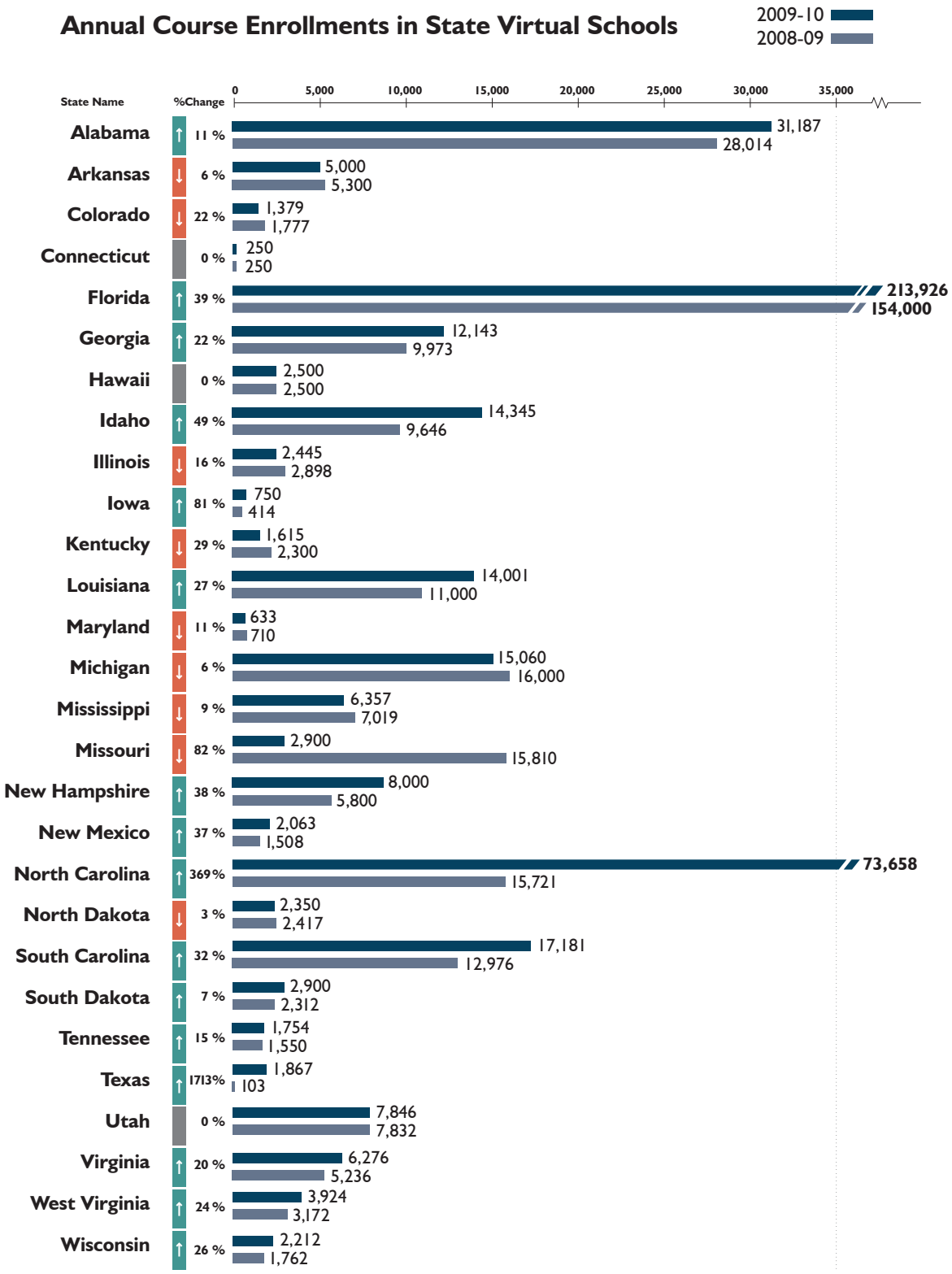

Figure 2: Size and growth rates of state virtual schools
No data exists for the three new state virtual schools in 2010-11

Many of the larger state virtual schools—those with more than 10,000 annual course enrollments—tend to be the ones growing the fastest (Figure 2). This suggests that some state virtual schools are receiving much more support (in funding and policies) than others, and that the discrepancy in size between the larger and smaller state virtual schools will increase over time.

Florida Virtual School's funding model and state policies are illustrative. The state law that allows all students in the state to choose FLVS, and that mandates that the public education funding follow the student, is the key reason for this growth. In its early years, and prior to the present funding model, FLVS received over $20 million of initial funding. Funding of FLVS is now based on successful course completions—one of very few large-scale, mastery-based, funding models in K-12 education. The overall result is that the funding flowing to FLVS is far larger than funding for other state virtual schools, and also that the funding is tied to the number of students, allowing FLVS to plan for growth.

Other states fund state virtual schools via an annual appropriation, often in combination with course fees paid by districts; in most cases the size of the state virtual school is strongly correlated with the level of the appropriation. Maryland, which places the bulk of the funding responsibility for online courses on school districts, saw a decline in online course enrollments in the Maryland Virtual School from 927 in 2007-08, to 710 in 2008-09, to 633 in 2009-10; as a result Maryland Virtual School remains among the smallest of the state virtual schools, only larger than Connecticut.

Full-time online schools and district online programs

The number of states with full-time online schools is also growing, and there are now 27 states plus Washington, D.C. with these schools operating statewide, and several additional states in which full-time online schools are available to some, but not all, students in the state. About 200,000 full-time students attend these online schools; states with the largest number of full-time online students include Ohio, Pennsylvania, and Arizona. Many of these online schools are affiliated with national educational management organizations such as Connections Academy, K12 Inc., Insight Schools, and Advanced Academics, but the number of schools not affiliated with a national organization is increasing as well. Maryland charter school law effectively prohibits online charter schools.

Online programs run by a single district, for students in that district, represent an emerging category of online learning activity. Limited data are available for district programs, but existing data points and anecdotal evidence suggest that the number of district programs is growing rapidly in many states. These programs often combine supplemental online courses and blended (online and face-to-face) learning opportunities; some include a full-time online school option as well.

3. Maryland's experience with online learning

> *"There is a digital gap that remains, and there needs to be some public policy discussion about leveling the field. For example, when we have public housing renovation, why not provide connectivity in those units so low-income students have the opportunity to access online courses, research opportunities and other things in their homes. We're leveling the field for food and other areas. We provide free and reduced lunch, if a student cannot pay for a field trip we do, but there is no provision in policy or finance that says if a student wants to participate in an online learning course that we have to supply them with the tools to do that ... Right now some of our kids have the tools, some of our kids do not have the tools."*
>
> Dr. Kevin M. Maxwell, Superintendent of Schools, Anne Arundel County Public School System

The Maryland education system is consistently rated as one of the strongest in the U.S. and was ranked number one in the nation by Education Week and the College Board in both 2009 and 2010.[8] Maryland's ranking reflects high marks in student performance, state education policies, state accountability and standards, school readiness, high school reform and student preparation for college and the workplace. A key challenge for Maryland educators, however, is how to provide equity and access to learning opportunities across a diversity of students. Maryland ranks first among all states in average median household income, yet 25% of the nearly 900,000 K-12 and pre-kindergarten students qualify for free or reduced lunch, and more than 140 languages are spoken in the state.[9]

The Maryland State Educational Technology Plan,[10] adopted in 2007, identifies online learning as a catalyst to:

- Address individual learning styles using technology to provide differentiated instruction;
- Remove physical barriers to allow students to meet and interact in a variety of ways—"on-campus and off";
- Provide approved, high-quality digital content;
- Give teachers the means to collaborate across time and space;
- Allow students to "facilitate their own learning, guided by teachers knowledgeable in content, pedagogy and technology infusion";
- Help students understand the ethics and responsibility of digital citizenship.

Maryland has created a state virtual school through legislation, and several districts operate online programs, but overall the state's experience with online learning has lagged behind other states and behind the vision set forth in the Technology Plan.

[8] Associated Press, http://marylandpublicschools.org/MSDE/pressrelease_details/2009_02_04.htm

[9] The Fact Book 2008-2009, MSDE, retrieved January 2, 2010, http://www.marylandpublicschools.org/NR/rdonlyres/FCB60C1D-6CC2-4270-BDAA-153D67247324/22419/Fact_Book_2008_20091.pdf, and http://www.us-english.org/view/303, and http://www.hometownglenburnie.com/news/Top_Stories/2010/01/02-26/More+students+receiving+free+lunch%0A.html, and http://www.montgomerycountymd.gov/apps/News/press/PR_details.asp?PrID=4844

[10] The Maryland State Educational Technology Plan for the New Millennium, 2007-2012, retrieved October 22, 2010, http://www.marylandpublicschools.org/NR/rdonlyres/C3BAD835-6100-484C-8397-85279EB95A34/13485/TechPlanFinalfromPrinter73007.pdf

SUPERINTENDENT VIEWPOINT

Dr. Carol A. Williamson, Queen Anne's County Public Schools

Queen Anne's County Public Schools has not yet developed an online learning program, but Superintendent Dr. Carol A. Williamson supports online learning as an important future step and is working to increase acceptance of online learning as a key instructional strategy.

Queen Anne's County has identified a number of student populations that will benefit from online learning options, including teen parents, home hospital students, those in need of credit recovery, and those in need of scheduling flexibility in the adult education program. Online learning can address student equity issues by providing access to courses the district may not able to offer in all schools, and for courses where only a few students may enroll, such as AP® foreign language. "Online learning can aid students looking for ways to make up courses, or it can provide opportunities for students to achieve and excel in their area of interest and still get academic credit for it," says Dr. Williamson.

A lack of technology infrastructure is the single most significant barrier to expanding online learning in Queen Anne's County. "I would find the funding within our budget to start an online learning program, but first we have to have reliable, broadband access to the Internet," said Dr. Williamson. In addition, "we need to educate counselors, curriculum specialists and teachers in the value of online learning. If we do not have the staff who knows what quality online learning options are available and what options can help kids be successful, it's not going anywhere."

Dr. Williamson values the role the Maryland Virtual School plays in providing approved online courses so districts know that the online curriculum meets state and national quality standards, which can help overcome any negative perception of online learning. In addition, there are economies of scale associated with statewide services rather than duplication of tasks and expenditures from one district to another.

"We will see a significant increase in the use of online learning in the next few years. We're starting basically at zero, but if we can solve our connectivity issues and find online courses that fit our needs, I don't think it will be the funding component that stops us. It will be an acceptance that students taking online courses can be successful … If Maryland really wants to get something started in some of the smaller districts it is important to convince counselors and curriculum supervisors that online learning is important and that it provide benefits by broadening what their students can access. [Curriculum specialists and counselors] will drive the effort and get teachers motivated to participate."

Maryland Virtual Learning Opportunities program

The Maryland Virtual Learning Opportunities (MVLO) program is an educational service managed by the Maryland State Department of Education. MVLO was established by legislation[11] in 2002. It was designed to expand the access of Maryland public school students to a variety of curricula and digital resources aligned to the Maryland Content Standards, as well as to other appropriate standards, through the delivery of high quality online courses. MVLO encompasses three programs: the Maryland Virtual School (MVS), which provides supplemental online courses for grades 6-12 in collaboration with the local school systems; the High School Assessments (HSA) program; and Online Professional Development (OPD). (Figure 3)

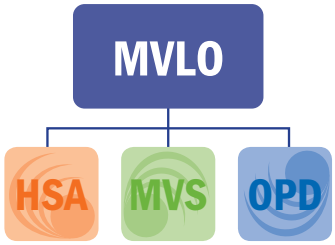

Figure 3: MVLO organization

The **High School Assessments (HSA)** program is a series of online courses and curricula that replicate the pedagogical design, content, and assessments of the required High School Assessments, tests that measure school and individual student progress. The HSA program gives students the kinds of reading, writing, mathematical calculation and problem solving, and analysis tasks that they need to be successful on the associated high school assessment required to gain a diploma.

Four online courses in Algebra/Data Analysis, Biology, English, and U.S. Government are used by schools and teachers as part of their regular classroom instruction, as part of intervention or remediation efforts, or as an extension to the instruction for students who have been absent or need extra practice, extended time, or an additional way of learning the materials. They are also used as part of outreach efforts with parent and community support groups.

The Biology, Algebra/Data Analysis, English, and U.S. Government courses can also be offered as regular credit-bearing online courses through arrangements with the Maryland Virtual School. For the biology course, the local school system is responsible for providing supervision for the required labs.

Online Professional Development (OPD) has grown from offering four courses to teachers in 2005 to a current course catalog that now includes 26 courses. Professional development on HSA courses also continues to grow—with 336 teachers participating in state-offered OPD in 2005, and 580 in 2009 (this number does not include local school districts' HSA professional development classes). Additional online professional development courses ranging from *Teaching & Learning with Web 2.0 Tools* to *Getting Ready for Algebra with Virtual Manipulatives* to *Smart Kids with Learning Difficulties* attracted another 360 teachers in 2009.

OPD courses in development include two essential reading courses for elementary teachers; a course on teaching English Language Learners in high school level social studies, mathematics, and science classes; and a pair of courses on integrating STEM (science, technology, engineering and mathematics)

[11] Maryland House Bill 1197, retrieved October 22, 2010, http://mlis.state.md.us/PDF-Documents/2002rs/bills/hb/hb1197t.pdf

instruction into elementary and middle grades classrooms. Planning has begun for an adapted physical education course for all physical education teachers, grades pre-kindergarten through 12.

Maryland Virtual School

Maryland Virtual School (MVS) offers supplemental online courses to students across the state. Teaching is conducted online, with instruction designed to meet the Maryland definition of an acceptable online course. The teacher communicates with students online and via the telephone, and a local School Site Coordinator provides site-based support. MVS is not a school and does not offer a high school diploma program. MVS offered more than 60 for-credit courses, including 22 Advanced Placement® courses. Credit earned by taking an MVS course is entered into the student's record by the local public high school or school system. Students may take a course through MVS only with the permission of the local system and the school principal.

MVS addresses a number of educational challenges for students and districts by:

- Expanding the range of courses and opportunities offered to students;
- Providing additional support and extended time to students who would benefit;
- Allowing juniors or seniors to make up a course needed to graduate;
- Presenting high-quality instruction to students in special education, alternative education settings, or home and hospital instruction;
- Allowing students to take a course when there are too few students who need a certain course to be able to assign a teacher to teach that course, particularly Advanced Placement® courses;
- Providing courses for students who have schedules that prevent them from taking a course when it is offered.

To assure a quality online learning experience, MVS has established an extensive set of policies and procedures,[12] minimum technical specifications, school requirements and registration procedures, and a *Planning, Implementation and Evaluation Guide*. As with many state virtual schools, MVS builds some original online courses and licenses some course content from commercial curriculum providers. All MVS courses[13] meet Maryland state standards and have been reviewed and approved by the Maryland State Department of Education (MSDE) per Code of Maryland Regulations (COMAR) requirements. Online teachers meet Maryland criteria for "highly qualified" teacher as defined by federal legislation and have been trained to teach online courses.

MVS has not been funded at a level close to that of the larger state virtual schools, and it has enrolled far fewer students. Unlike most state virtual schools, there is no legislative appropriation to support the state online program. MVS is funded largely through course fees paid by school districts that cover the cost of the content, instructor and technology delivery. Course costs range from $15 per student per course for districts that simply want to use the course content that MSDE owns or leases, up to $800 per student for a course with a highly-qualified instructor provided through MVS. The average course fee is $450-$600. MVLO received funding of approximately $400,000 for 2008-09

[12] MVS practices and procedures documents can be found at http://mdk12online.org/schools/schoolshome.htm, retrieved October 29, 2010

[13] A complete list of MVS courses and course providers can be found at http://mdk12online.org/docs/MVSCourseDescriptions.pdf, retrieved October 30, 2010

SUPERINTENDENT VIEWPOINT

Anne Arundel County Public School, Dr. Kevin M. Maxwell

Anne Arundel County Public Schools (AACPS) began its online learning program in 2004, with the goal of making low enrollment courses more widely accessible to students in the district and to provide a broader range of accelerated courses. "Online learning gives us the ability to have students participate in courses they otherwise would not be able to access," explains Dr. Kevin M. Maxwell, AACPS Superintendent. "In our school-to-school program, we had one Calculus III teacher for the entire district who was limited to teaching a few students at one location. By offering the course online we were able to pull together students at the three additional high schools who would not have been able to access this course in any other way. Those schools could not afford the staffing to offer a course for so few students." AACPS is now considering using online learning for larger original credit courses, in part to see if there is a cost benefit when applying an online learning strategy to these high-enrollment courses.

AACPS is also using online learning for homebound students and those absent from school for short-term health reasons. The program has been growing for the past five years, with about 40 classes now offered. "A student has only one 'home and hospital' teacher, and may be taking four classes," Dr. Maxwell said. "The probability that one home and hospital teacher will have the broad expertise in all of those subjects is not very likely."

There is concern over the limited number of online learning opportunities in district high schools, particularly with the emphasis higher education has placed on technology skills. "High schools really should be preparing their students for advanced learning by requiring them to take at least one online course," said Sally Combs, Assistant Superintendent of Student Services. "Colleges require students to go through an orientation module before taking an online course to find out if they are ready for an online course. Many of our students think [an online course] will be a piece of cake…and they find out it's not. It's a rude awakening."

AACPS has also been considering how online learning might help in the case of school closures due to epidemic or disaster. "How are we going to deliver learning to students, and how would teachers do the same thing?" asks Dr. Maxwell. "We've talked about how to handle administrative tasks, but how do we address instructional continuity of service as an educational organization? It's a challenge that we have varying levels of confidence among the staff, and one where online learning can have a definite impact."

Dr. Maxwell is supportive of how state programs can help district programs. "The statewide program holds everyone accountable to the same requirements of both testing and content, but funding becomes a question; is it a service we can take advantage of at little or no additional cost, or is it mandated without funding? If it's a trade-off of one service for another, it makes it difficult to expand a program." Dr. Maxwell observes that every county is doing its own thing, and suggests that there must be some saving for the districts by eliminating redundancy. "It makes sense that MSDE coordinates among counties to capitalize on economies of scale across the state."

from various departments within the MSDE and from the Channel Capacity Leasing Funds. Course enrollments declined from 927 in the 2007-08 school year, to 710 in 2008-09, to 633 in 2009-10, largely due to a lack of funding at the district level to purchase MVS services.

The burden for bearing the costs of students taking an individual online course is born by the school district, and each district is left to its own devices to find funding within its individual budget. Table 1 compares attributes of the Maryland Virtual School to other state virtual schools.

Program name	Start date	Governance	# Course enrollments	Grade levels	Annual funding
Alabama ACCESS	Fall 2005	SEA	31,187	9 to 12	$22,500,000, includes technology funds
Illinois Virtual School	Spring 2001	SEA	2,445	5 to 12	$1,116,000 plus course fees
Louisiana Virtual School	Fall 2000	SEA (State Board of Education)	14,001	6 to 12	$2,370,000 plus $150 / enrollment course fees
Maryland Virtual School	Fall 2003	SEA	633	6 to 12	$400,000 plus some course fees
Mississippi Virtual School	Fall 2006	SEA	6,357	6 to 12	$1,800,000
North Carolina Virtual Public School	Summer 2007	SEA	73,658	6 to 12	$20,000,000
Virtual Virginia	Fall 2004	SEA	6,276	6 to 12	$3,000,000 plus some course fees
West Virginia Virtual School	Fall 2001	SEA	3,924	6 to 12	$650,000 plus course fees

Table 1: State virtual school governance, course enrollments and funding[14]

Maryland online learning policy

During 2002, the General Assembly passed House Bill 1197,[15] initiating MVLO. House Bill 1197 authorized the State Superintendent of Schools to procure and develop computer-based learning resources and long-term, comprehensive instructional programming and directed the MSDE to offer "... a distance-learning program to provide Maryland public school students with equal opportunities to develop a strong academic foundation...offering expanded educational choices not otherwise available to students through on-line courses and services; and expanding the professional development opportunities available to educational staff in Maryland public schools through on-line courses and services."

HB1362[16], passed in 2010, authorizes school districts to establish a virtual public school, subject to the approval of the Maryland State Department of Education (MSDE). The legislation requires that the curriculum "... have an interactive program with significant online components." The law does not define the specifics of "interactive" nor the extent to which "online components" should be incorporated in a course. The legislation also does not state whether a student has the choice of enrolling in online courses in programs outside the resident school district. Although teachers in the

[14] *Keeping Pace with K-12 Online Learning: An Annual Review of Policy and Practice (2010)*, Evergreen Education Group, available at http://www.kpk12.com

[15] Maryland House Bill 1197, retrieved October 22, 2010, http://mlis.state.md.us/PDF-Documents/2002rs/bills/hb/hb1197t.pdf

[16] HB1362; retrieved October 10, 2010, http://mlis.state.md.us/2010rs/billfile/hb1362.htm

virtual school must be state-certified, the law does not require any additional training specifically in online instruction. A virtual school must maintain an office in the state of Maryland and is not allowed to provide funds for the purchase of instructional programs or materials to a student, parent, or guardian. The new law does not change an existing provision of charter school law that requires that students be "physically present on school premises."[17] HB1362 does not go into effect until fall 2011, and the Governor has tasked MSDE with reviewing and recommending changes to it during the 2011 legislative session.

HB1197 authorized MSDE to develop standards for teachers and other school system employees for the offering of online courses or services, to review courses and courseware to "assure quality and alignment with the Maryland content standards and other appropriate standards," and to purchase and develop Internet-based learning resources and courses for students and staff. Based on the requirements of HB1197, some online learning policies and procedures have been codified in Code of Maryland Regulations (COMAR) and by the Maryland State Department of Education (MSDE).

HB1197 required MSDE to "review courses and courseware to assure quality and alignment with the Maryland content standards and other appropriate standards." Under COMAR 13A.03.02.05D(1),[18] Maryland schools can only award course credit for online courses approved by MSDE. The MSDE has established an approval process that applies to all online courses offered by a local school district, whether commercial curriculum providers or the school districts themselves develop courses. The MSDE course approval process also applies to online courses from higher education institutions used in partnerships with high schools for dual enrollment. All courses developed and distributed by the Maryland Virtual School have been reviewed and approved by a panel of highly-qualified teachers who examined the courses for alignment with state and national content standards. Online course assessments have also been reviewed for their alignment with MSDE instructional design standards.[19]

The Maryland State Department of Education defines an online course as "a course provided through the Internet and other technologies in which 80% or more of the instruction is conducted online with the teacher and student separated by distance or time or both and in which two-way communication between the teacher and student is required." This definition is a key differentiator in terms of what constitutes an online course versus various other forms of technology-based instruction and self-paced curriculum that do not provide for a teacher mediating the educational experience for the student.

Although three bills dealing with some aspect of online learning were proposed in the state legislature in 2009, none passed, and online learning activities are still guided by this 2002 legislation. Because a provision of charter school law requires that students be "physically present on school premises,"[20] there are no online charter schools in Maryland.

[17] Maryland State Code § 9-102; retrieved June 10, 2010, from http://www.marylandpublicschools.org/NR/rdonlyres/64999462-AD67-47E0-9366-35457DCBACF2/7967/ModelPolicyGuide.pdf

[18] COMAR 13A.03.02.05D(1), retrieved October 19, 2010, http://www.dsd.state.md.us/comar/comarhtml/13a/13a.03.02.05.htm

[19] MSDE memorandum, *Clarification of COMAR course approval requirements*, August 17, 2009

[20] Maryland State Code § 9-102; retrieved October 30, 2010, from http://www.marylandpublicschools.org/NR/rdonlyres/64999462-AD67-47E0-9366-35457DCBACF2/7967/ModelPolicyGuide.pdf

FEATURE

Student eLearning in Montgomery County Public Schools

Montgomery County Public Schools' (MCPS) Student eLearning program is the largest district program in Maryland, with 1,100 course enrollments during the 2009-2010 school year. MCPS online courses are customizable at the course and individual levels, and are used as online courses, hybrid courses, for credit recovery, or to enhance and individualize classroom instruction. According to information supplied by Student eLearning Program staff in February and November 2010, MCPS plans to continue to offer the current courses and examine possibilities for future course development. These courses are available to, and in use by, other Maryland school systems.

MCPS online teachers provide students with detailed feedback and encourage deeper levels of participation and facilitate group projects and discussions. The program provides on-going professional development and mentoring for each teacher, which is a significant factor in a student retention rate that has remained above 98% and a student success rate as good as, or better than, classroom achievement.

Online learning in Washington County Public Schools

Washington County Public Schools (WCPS) utilizes online learning to expand its range of high school credit bearing courses and to meet the instructional needs of students when staffing and scheduling conflicts arise. Currently, WCPS is building capacity for increased usage of online learning. Prior to the 2009-10 school year, the district enrolled students in the MSDE-approved online courses provided by content vendors, utilizing vendor provided instructors.

"We appreciate the support of the Maryland Virtual School in providing the resources for the delivery of online courses, and MSDE's role in course review and vendor selection," says Anne Higman, Technology Integration Specialist and on-site coordinator for the online program at WCPS. "We want to always offer the highest quality courses and do not have the manpower to evaluate and preview all of the various vendor offerings on the market."

WCPS is actively preparing district instructors to provide high-quality online instruction while utilizing the same approved vendor content. Teachers participate in professional development activities, which include the Maryland State Department of Education-approved Online Teaching and Facilitation course, as well as individualized training geared toward content and course specific needs.

School-based "mentor-teachers" provide direct student monitoring and supervision. Additionally, WCPS encourages the use of a hybrid form of virtual schooling. When possible, face-to-face interaction between the student and teacher is scheduled at the school for further instructional support.

WCPS leadership strongly supports online learning as an option for students. In school year 2009-2010 course enrollments more than tripled with approximately 65 course enrollments in 15 different courses, including AP® Psychology, AP® World History, AP® English Literature and Composition, Health, and world language courses in Spanish, French and Latin. As of October 2010, WCPS projected approximately 78 course enrollments in various online courses for the 2010-11 school year.

SUPERINTENDENT VIEWPOINT

St. Mary's County Public Schools, Dr. Michael J. Martirano

Although St. Mary's County Public Schools has minimal participants utilizing online learning, Superintendent Dr. Michael J. Martirano recognizes the potential value of online learning in response to district challenges: providing the flexibility to allow students to study and learn anytime and anywhere; the ability to target individual student needs by providing courses not currently offered; offering courses with low enrollments tailored to individual student needs; and creating an environment that fosters interaction with a broader range of peers, adults and experts as part of the learning experience. He believes that "students feel greater freedom of expression online than they feel in the face-to-face environment."

St. Mary's County has implemented an aggressive technology agenda on campus, expanding the use of data to make decisions and relying more on online professional development, and "[online learning] is the next natural step for us as a school district. I think our teachers are very receptive to it because they have embraced every technology implementation in a very positive way. They see the full advantage of being able to work smarter, being able to be more efficient and have better outcomes in the delivery of instruction."

Funding is Dr. Martirano's greatest concern. The lack of funding for technology infrastructure, online curriculum, professional development, and the facilities and support staff within the schools necessary to launch an online learning program has stymied efforts to integrate online learning as an instructional strategy.

Dr. Martirano sees providing online options for middle and high school students as an immediate priority, but also entertains using online curriculum at the elementary level. "I see how children learn in this day and age. They are constantly being stimulated by the material coming into their lives — whether through text messaging, gaming systems, their involvement with computers. They are well-equipped to handle this type of information at a very high level."

4. **Outlook and recommendations**

"We need to educate students for their future, not our past."

Daniel Pink, author of *A Whole New Mind*, 2006

Online and blended learning are taking root in nearly every state across the country. Their broad growth is due to students' desires for increased flexibility and course options, and educators' interests in providing more course and highly-qualified teacher options. Maryland, however, has lagged behind most other states in implementing extensive online programs, largely because the state has not yet prioritized online learning. Some Maryland educators recognize the value of online learning; for example Dr. Colleen Seremet, the former Assistant State Superintendent of Instruction for the Maryland State Department of Education, notes that online learning allows school districts to provide quality online experiences, and provides greater equity and flexibility to students through online access to the High School Assessment (HSA) test preparation courses and other courses. Dr. Seremet notes, however, that the common thinking across Maryland has not caught up to educational technology practice. "We need to stop thinking about courses and curricula (especially textbooks) in a traditional sense and start thinking about digital content that can be mixed and matched by teachers and curriculum experts for a variety of learning experiences. We need to develop funding models that address new content purchasing needs. One of the biggest barriers to the expansion and utilization of online learning may be an 'old school' approach. We have a unique opportunity with a convergence of the stimulus program, common core curriculum, and national assessments to act as a catalyst for a change in K-12 instruction. What we need is a new instructional model, and online learning can provide that unifying element." Delegate Sheila E. Hixson, Chair of the College Success Task Force, P-20 Leadership Council of Maryland, agrees. "There is a lack of awareness and understanding of how extensively online learning can be used to address some of our most pressing educational challenges, including accelerated learning and a shortage of highly-qualified certified teachers."

Although Maryland has created Maryland Virtual Learning Opportunities, and several districts have implemented online learning opportunities for their students, the state is far behind most other states in terms of creating online learning programs and options. Of the 31 states that have created state virtual schools, all but one have more students taking supplemental online classes than Maryland—and the number in Maryland is even smaller as a proportion of the state student population. States such as Idaho and Arkansas have far larger state virtual schools despite having significantly smaller student populations. HB1362[21] addresses local online learning options, allowing a school district to establish a

[21] HB1362, retrieved October 10, 2010, http://mlis.state.md.us/2010rs/billfile/hb1362.htm

virtual public school, but does little to strengthen online learning at the state level. Maryland also does not provide options for full-time online schools, which exist in about half of all states.

Maryland's third wave of reform has been implemented to create a world-class system that prepares students for college and career success in the 21st Century. In August 2010 Maryland was awarded one of the federal Race to the Top (RTTT) grants in the amount of $250 million over four years. The RTTT program is aimed at accelerating Maryland's vision of reform, specifically to:

- Revise the PreK-12 Maryland State Curriculum, assessments, and accountability system based on the Common Core Standards to assure that all graduates are college- and career-ready;
- Build a statewide technology infrastructure that links all data elements with analytic and instructional tools to monitor and promote student achievement;
- Redesign the model for preparation, development, retention, and evaluation of teachers and principals;
- Fully implement the innovative Breakthrough Center approach for transforming low-performing schools and districts.[22]

Maryland's plan is intended to boost student achievement, reduce gaps in achievement among student subgroups, turn around struggling schools, develop a "statewide technology infrastructure that links all data elements with analytic and instructional tools to monitor and promote student achievement, and improve the teaching profession, including the expansion of online educator professional development for capacity-building and sustainability."[23]

Online learning has not been as high a priority in Maryland as in some other states, possibly because traditional education programs have been successful. There may be less motivation to improve and be innovative in new instructional models due to this success. "The state needs to demonstrate a level of leadership, to advocate for the allocation of dollars for online learning that have not been there, but we have not made the most impressive case for the needed funding," notes Dr. Nancy S. Grasmick, Maryland State Superintendent. "If the state steps forward and provides quality assurances, and we work with our superintendents and those responsible for professional development, online learning has huge potential."

To increase online learning opportunities and student outcomes, Maryland should implement several steps:

Expand the Maryland Virtual School to increase opportunities for supplemental online courses for students

This expansion would focus on several key areas, filling the gaps in educational opportunities for students across Maryland while consolidating services for districts in a cost-effective manner. These key areas include credit recovery courses, summer school, expanded career technology education, and courses in math, science, and foreign languages. Online credit recovery, in particular, has proven successful in other states for at least two reasons. First, the course materials are delivered in a manner different from the face-to-face classroom where the student failed in the first attempt at the class, and

[22] MSDE web site, retrieved October 29, 2010, http://www.marylandpublicschools.org/MSDE/programs/race_to_the_top/

[23] Ibid

online courses often provide an opportunity for more individualized feedback from the instructor. Second, online courses can focus on the material that the student did not master the first time through the course, by engaging the student in a formative assessment and then guiding the student to the materials that were not yet mastered. While these courses may provide a starting point for an expanded Maryland Virtual School, student demand for online courses extends to a wide variety of subjects and, over time, the course catalog will grow to accommodate student demand. In other states, for example, increasing summer school options has proven to be an important support for school districts struggling to provide these badly needed student services.

Create a funding model that allows the Maryland Virtual School to grow sustainably over time

Over the next three years, state funds should be appropriated to the Maryland Virtual School (MVS) to allow MVS to grow, and for students to take advantage of high quality online courses, without impact on funding to individual school districts. The Southern Regional Education Board has estimated that the cost of creating and running a state virtual school that provides 5,000 course enrollments is $4 million, and providing 10,000 course enrollments costs $6 million.[24]

The way in which the Florida Virtual School (FLVS) has been funded provides a model for Maryland's long-term funding of MVS. In its early years, FLVS was funded via a state appropriation, as it developed courses, trained teachers, and invested in technology. After several years of operations, the funding was changed and FLVS is now funded based on the number of students successfully completing a course. The funding per successful course completion is based on the proportion of total per-student funding from the state that one course represents. In addition, students across Florida have been given the right to choose an online course from Florida Virtual School in place of, and sometimes in addition to, courses in their physical school.

This approach to online learning puts students and parents in control of the choice of taking an online course in a given subject. If Maryland follows this path, students whose parents support their wish to take an online course will be able to do so without restriction, and the Maryland Virtual School will be able to meet demand because the funding will follow the student. This approach, of proportional funding following the student, is the only funding model that has allowed for growth to meet student demand; it is why Florida Virtual School is five times larger than any other state virtual school in the country. This model can allow districts to receive a portion of student funding to cover physical plant and transportation costs incurred by supplemental students on their local campus.

Fund online courses based on successful course completions, ensuring cost-effectiveness while freeing online schools from seat-time requirements

Several states have followed the Florida approach of funding online courses based on successful course completions, and Maryland should consider this funding method as well. Funding course completions entails two key components. First, it frees districts and online schools from seat-time requirements that do not apply to the online environment. Second, it allows funding based on mastery, and allows students to move through a course at any pace, while maintaining the high quality standards currently demanded in the face-to-face environment.

Funding based on mastery makes sense because it ties funding to the educational goal—student outcomes—instead of a poor proxy for that outcome. Julie Young, President and Chief Executive

[24] Southern Regional Education Board, Cost Guidelines for State Virtual Schools: Development, Implementation and Sustainability, 2006

Officer of Florida Virtual School, has noted that in online courses mastery becomes the constant and time becomes the variable, which is the way education should be operated, and funded.

Expand the Maryland Virtual Learning Opportunities professional development program for teachers

Many states are discovering the practical benefits of online professional development for teachers. Online professional development reduces travel cost and travel time, and allows teachers to fit professional development into their teaching and school schedules. Several states have implemented online professional development through the state education agency or state virtual school, in programs such as Michigan's LearnPort.[25]

In the same way that a state virtual school consolidates services for districts, Maryland Virtual Learning Opportunities can consolidate high-quality professional development for teachers. These professional development courses will extend beyond online learning to include blended learning, the use of online tools and resources in the classroom, and topics that go beyond educational technology.

Continue the Maryland Department of Education's involvement in quality assurance of online courses offered by school districts

In addition to the Maryland Virtual School's creation of its own courses, MSDE should continue and expand its role in ensuring quality of online courses offered by individual school districts. The MSDE role might be enhanced by considering other models from around the nation. In Florida, the Department of Education approves online course providers, in addition to courses, before they work with school districts. Regardless of any changes or expansion in the method for the MSDE in approving online courses, the MSDE role in this evaluation becomes more critical with the passage of HB1362, and should be reflected in the recommended changes to HB1362 during the 2011 legislative session.

Implement an online learning requirement

Schools and students usually choose online courses because they provide scheduling flexibility, or a highly qualified teacher in a subject in which a classroom teacher is lacking. In addition, some states have recognized that online courses provide information and technology literacy skills to students. Michigan and Alabama, for example, believe that information and technology literacy skills are so important that the states have mandated that students have an online learning experience as a high school graduation requirement. Maryland students would benefit from a similar requirement, as long as it is tied to adequate funding to ensure success.

Work with school districts to provide blended learning and prepare to implement continuous learning during disruptive events

One development capturing the online learning limelight is blended learning—schools, courses, and programs that combine online and supervised brick-and-mortar elements.[26] Maryland has created the Hybrid Course Process and Product consortium, a Title II-D Education Technology grant funded partnership formed to address the need by school systems to create a model for hybrid, or blended

[25] Michigan LearnPort contains over 300 professional development online courses serving more than 16,500 course enrollments in 2009-10, retrieved October 21, 2010, http://www.learnport.org/ and *Keeping Pace 2010*

[26] *Keeping Pace with K-12 Online Learning: An Annual Review of Policy and Practice (2010)*, Evergreen Education Group, available at http://www.kpk12.com, page 40

learning, course development. This partnership grant is examining the current best practices and research-based strategies to develop and pilot a hybrid course in World History, including researching best practices in history instruction, in hybrid course development and implementation, and in the use of portfolio assessment. From the course development, a process guide will be created outlining findings and evaluations of the process. Local school systems will then have the opportunity to apply the process guide to their own course development efforts.

This blended learning effort should be expanded into greater use of online content, tools, and resources in classrooms across the state. In addition, a blended learning program may form the basis for exploring how online courses can be used to develop continuity of learning plans for Maryland schools.

There is increasing awareness in many states of the potential of online courses and technologies to allow students to continue their studies even if schools are closed due to a pandemic or natural disaster. Online learning and continuity of learning involve more than just providing curriculum in an online format; they also require the planning, training and management of delivery of instruction. These, in turn, require planning and building processes for addressing curriculum materials, people, and technology on a statewide basis. At the local level, districts can then prepare to inform teachers, students and parents; access the technology tools and platforms necessary to deliver instruction; and ensure the availability of instructional materials.[27]

[27] This section on *Continuity of Learning*, is reprinted by permission of iNACOL. Additional details on continuity of learning can be found at http://www.inacol.org/col/, retrieved October 21, 2010.

Conclusion: The potential for transformation

> *"We have the ability to transform schools through virtual learning, not on a sporadic basis, but as a consistent component of what represents change in a school."*
>
> Dr. Nancy S. Grasmick, Maryland State Superintendent

The suggestions outlined above represent a first step for transforming education in Maryland. Many states that have created successful state virtual schools and/or full-time online schools have seen those initial steps lead to innovations in individual school districts, where change must be implemented to be lasting and permanent. These innovations include extensive use of online and blended courses in school districts such as Omaha Public Schools, pioneering inner-city online schools in Denver and Chicago, student-centered learning in California and New York, a virtual academy based within a physical school in rural Idaho, and countless other seeds of change. Many of these innovations were spurred by policy changes similar to those suggested in this report.

According to Maryland State Superintendent Nancy Grasmick, "We need to build on the successes of what we currently do and expand online learning into our instructional programs and professional development. We need to connect the dots regarding the benefits of online learning. It has been seen as a silo issue, so it does not connect to anything else in our educational strategy. We need to talk about the integration of online learning in all of the various parameters, as a component of a strong educational program."

With this report, the MSDE intends to engage in the conversation that will lead to action and improved opportunities for Maryland students.

What is online learning?

Many terms and definitions in the field, such as online learning, e-learning and virtual schools, do not have commonly understood definitions. This report is focused on distance learning that takes place via the Internet, an anytime and anywhere (asynchronous) learning experience facilitated by a teacher which may or may not include some real-time (synchronous) components. This type of learning and educational content includes video, text, audio and simulations that are delivered via the Internet. Whatever term is used to describe it, online learning is being used in many ways. Examples among the range of possibilities include:

- Expanding the range of courses available to students, especially in rural and inner-city schools, beyond what a single school can offer;
- Providing highly-qualified teachers in subjects where qualified teachers are lacking;
- Expanding credit recovery options for students;
- Building content resources that can be used by students, teachers, and parents, and can be shared across school systems;
- Providing flexibility to students facing scheduling conflicts;
- Affording opportunities to at-risk students, elite athletes and performers in the arts, dropouts, pregnant or incarcerated students, and students who are homebound due to illness or injury, allowing them to continue their studies outside the classroom;
- Addressing the needs of the 21st century student, as the online medium is consistent with these students' expectations and interests;
- Increasing the teaching of technology skills by embedding technology literacy in academic content; and
- Providing professional development opportunities for teachers, including mentoring and learning communities.

Types of online schools and programs

Online schools and programs across the country vary widely. They may provide full-time or supplemental opportunities for students; they may be run by a state, district, post-secondary institution, or consortium; and they may attract students from within a single district or across national borders.

From all of these combinations of options, there are five major categories of online programs:

- **State virtual schools** are authorized and funded by the state legislature, state education agency, or governor's office; and often operate from within the state department of education. They are usually supplemental, providing one or two courses per semester to students who are enrolled in physical schools across the state. They are often funded via state appropriation, sometimes supplemented with grants, course fees paid by districts, or other sources of funding. Thirty-one states have state virtual schools, including Maryland, and additional states have these schools in proposal or planning stages.

- **Full-time, multi-district online schools** operate across 27 states plus Washington D.C. and are usually, although not always, charter schools (states with statewide online schools that are not charters include Washington, Oklahoma, and Colorado). These online schools draw students across district lines, and often across entire states. Because they are drawing students from a wide geographic area, they usually do not have a formal face-to-face component. They are funded based on the public education funding formula, which may be different for online students, or for students in charter schools, than for students in other non-charter physical schools. The funding follows the student and the online programs' overall funding is closely linked to the number of students they attract.

- **Single-district programs** are run by one district and primarily serve students within that district. They tend to be supplemental, although some include full-time students. They often blend online and face-to-face components in part because they are drawing students from a narrow geographic area, and in some states because funding requires that students be physically present to be counted. Although they are indirectly funded by the same method as school districts, their funding may not be directly tied to the number of students taking courses.

- **Consortium online programs** may be run by a group of school districts, by a non-profit organization that works with schools, or by another intermediate education agency. They are usually funded by member schools or by course fees, and are usually supplemental.

- **Postsecondary online programs** are often connected to independent or alternative study schools that were created by a college or university before online courses were available; therefore they date back to correspondence courses. These programs are sometimes, but not always, tied to dual-credit for students enrolled in a traditional high school.

The distinction between full-time and part-time (or supplemental) online programs is especially important. Full-time online schools are public schools that report student results on state assessments in the same manner as all public schools in their state. If the state requires accreditation, full-time schools are accredited in a manner similar to other public schools. Supplemental programs, such as the Maryland Virtual School and most other state virtual schools, provide one or two courses to students who are enrolled in another, physical, school.[28] The student's school of attendance usually provides the grade and grants the credit for the course, and in Maryland all grades are recorded by the local school. In addition, in most cases state assessment scores and AYP (Adequate Yearly Progress) measures accrue to the physical school, not the supplemental program.

The online course environment

Teaching and learning in an online class vary in the same way that classroom teachers and classes vary. Some similarities and common approaches that many online classes share include:

- Online courses are typically delivered via a software package called a learning management system (LMS), also referred to as a course management system (CMS), that provides to teachers and students an easy-to-use Internet-based environment with which to interact with course content and each other. The LMS allows teachers to manage distribution of materials, create content and assignments, and administer communications and other aspects of instruction for their courses. The software has numerous features, typically including:

[28] Students taking a single course from a state virtual school could be enrolled in a full-time online school, but the large majority of all state virtual school students are enrolled in a physical school.

- **Authoring tools that make it relatively simple** for educators to structure the course and course content to meet the goals of a specific curriculum, pace the rate at which content is made available to students, post content of various types and easily change content as the need arises.

- **Tools that allow synchronous (i.e., real time) and asynchronous communication.** Asynchronous communication tools include email and threaded discussions. Synchronous communication tools integrate video (sometimes via webcam), audio (including voice over IP), text chat and whiteboard. Some programs also use phone calls between teachers and students to supplement communication via the Internet. Communication is a critical part of an online course, and many programs have specific communication requirements of teachers and students. Programs may require that students be in touch with their teachers three times a week, or that teachers check email at least once every school day and respond the same day.

- **Assessment tools and automatic grading capability.** Online assessments include different types of questions such as multiple choice, true/false, long answer, short answer and matching. Some of these questions can be automatically graded by the LMS using correct answers provided by the teacher, while others require individual assessment and commentary by the teacher.

- **Student activity tracking by the software.** However, time online is not a good proxy for time in a classroom, because it doesn't take into account student activity offline, which may be a substantial part of learning activity. The LMS may also track other information including discussion board posts, emails and assignments submitted.

- **Course structure that divides content** into lessons and units.

- Some courses use offline materials, including textbooks and hands-on materials, to complement the content delivered via the Internet. The type of course, and teacher preferences, determine to what extent certain features are used. An English course might rely heavily on online and offline text; Spanish might rely on audio clips so that students can hear proper pronunciation; a biology course might use animations demonstrating cell division in a way that no textbook can match.

- There are two approaches for how pacing is handled in online courses. Some asynchronous courses are self-paced, in which a student starts and ends at any time, and proceeds through the course at whatever pace is deemed appropriate by the teacher. Other courses have start and end dates so that students go through as cohorts, and pass certain milestones together, allowing for class discussions and projects.

The role of the online teacher

While teachers remain the central part of learning in the virtual classroom, experienced online teachers and, indeed, anyone familiar with technology in the 21st century, recognize that the role of the teacher is changing. The teacher and school system (including educational materials such as textbooks) can no longer be the only conduit of information to students—there is simply too much good information available. As the nature of learning (and working) changes due to the explosion of available information via the Internet and new ways of managing and accessing information, the focus of education must continue to evolve from passing along information to students to helping

students be better thinkers and learners. The role of the teacher, especially at the high school level, is increasingly to help build students' literacy skills and critical thinking.[29]

The online teacher's role can be broken down into several categories which help illustrate the differences between an online course and a traditional classroom course. These include:

- **Communication.** One of the main roles of the teacher in a student-centered learning environment is to be available consistently to provide guidance around the course material. For this reason many online programs have requirements for how often teachers must log in to their classes, and how quickly they must respond to student emails. Online teachers recognize the potential communication advantages and drawbacks of the online environment. The advantages include the increased comfort some students feel in participating in an online discussion board and the teacher's ability to record everything "said" in class. Disadvantages include the inability for the teacher to use nonverbal cues to determine a student's level of understanding of course topics. This is often overcome through increased written communication, attention to each individual student and frequent small assessments to ensure that students are staying up-to-date.

- **Guiding and individualizing learning.** In addition to course creation and communication, the teacher is guiding student learning in the online course. There are many ways in which this can be done, from creating and facilitating group discussions, to developing group projects, constantly adjusting course resources, and responding to students' questions and the concepts that they are finding most challenging. Programs in which students are enrolled in a physical school while taking an online course usually have the local school provide a mentor or facilitator to students taking an online course so that the students will have someone available for support within their school.

- **Assessing, grading and promoting.** Online teachers are also responsible for tasks that any traditional classroom teacher would recognize, such as creating, giving, and grading tests and homework assignments; providing overall course grades; and determining whether the student is ready to move on to the next unit, course or grade level. While the technology may automate some grading functions, these crucial assessment decisions remain the professional teacher's responsibility.

- **Material delivery.** Except for synchronous instruction, little course material is delivered via the equivalent of a classroom lecture.

- **Content availability.** In an online course, many types of content are available, including pre-developed digital content for many courses. Publishers, digital content companies and nonprofit educational organizations are increasingly developing digital content. Online programs often share course content within and across states, and repositories have been created that allow sharing of content in the form of reusable learning objects. An advantage of online learning is the opportunity to present concepts to students in ways that address a variety of learning styles. Auditory and visual learners may benefit from a video demonstration, while other students discuss the major topics to reinforce challenging concepts. In addition, online resources that have been created or vetted by the state virtual school can save time for classroom teachers who want to add such materials to their class but do not have the time to create or search for them.

[29] *High School on the Web*, Liz Pape, American School Board Journal, July 2005.

- **Content development.** The online environment allows for capturing the development of the course and individual content elements in ways that are not available in a classroom. Many online programs have instructional designers or design teams that develop courses together in a more formal way than most traditional classrooms use. Instructional designers are trained to understand how content can be created, modified or assembled to take greatest advantage of the online format of a course, and within an online school they help ensure consistency in course design.

Content for online courses

Online courses utilize digital, text-based content with the added benefit of technology delivery and interactivity. Course content may include text, graphics, video, audio, animation and other interactive tools. It may be online or offline, with offline content usually being paper textbooks, other books such as novels for an English class, or journal articles for a science class. Online content falls into two categories. It may be embedded within the Learning Management System, or may reside outside the LMS at approved, reliable Internet sites. Examples of the latter include e-textbooks at a publisher's website, which range from PDF documents to versions of books within e-book readers. Many online programs develop some of their own content and license other content from publishers and other providers.

Online courses typically meet state content standards, and Maryland Virtual School courses are reviewed to ensure they meet state, national and industry standards for quality content. Courses and course content licensed from outside sources are modified to meet these standards. Advanced Placement® courses must meet the requirements of the College Board. In addition to state content standards, there are quality standards for online course content. In September 2007 the International Association for K-12 Online Learning released its *National Standards of Quality for Online Courses*,[30] which are based on the Southern Regional Education Board's *Standards for Quality Online Courses*.[31] The standards' recommendations fall into several categories, including content, instructional design, student assessment, technology, course evaluation and management, and 21st century skills.

Professional development for online teachers

The skills needed to teach online not only include, but often go beyond skills needed to be a successful teacher in the traditional classroom. The elements of learning necessary to teach online fall into two categories. The first, learning the technology and tools of the LMS, is fairly straightforward. Online programs have trained staff who know their technology well, and can both train teachers before a class starts and provide ongoing help.

The second element of teaching online, effective online pedagogy, is much more complex. How does an English teacher motivate a discussion about the use of metaphors? How does a science teacher demonstrate the concept of gravity? Many online program professional development requirements focus on helping teachers understand how to motivate individual learners, enhance student interaction and understanding without visual cues, tailor instruction to particular learning styles, and develop or modify interactive lessons to meet student needs.

[30] International Association for K-12 Online Learning, *National Standards of Quality for Online Courses,* available at http://www.inacol.org/research/nationalstandards/

[31] Southern Regional Education Board, *Standards for Quality Online Courses*, available at http://www.sreb.org/programs/edtech/pubs/2006Pubs/06T05_Standards_quality_online_courses.pdf

Online teachers and researchers studying online learning report several key skills for online teachers that should be enhanced through professional development opportunities:[32]

- Teachers must develop heightened communication skills, particularly in written communication.
- In asynchronous programs, time management skills are critical for teachers (and students) because they can be online at any time.
- Teachers must be able to recognize different learning styles and adapt the class to them. Some online programs and many online teachers pay special attention to gaining an understanding of each student's skills and challenges in the early days of an online course to ensure that the course meets all students' needs.
- Teachers who have students with disabilities must know how to adapt course content and instruction to meet their needs.

Some online programs monitor and coach their teachers on many more dimensions than most physical schools. This is possible in part because of the nature of the LMS technology, which captures teacher-student interactions, class discussions and course content in a way that is not possible in a traditional classroom. A school administrator can drop into a threaded discussion without disturbing the student-teacher dynamic much more easily than a classroom discussion. Also, many online programs survey students one or more times per semester, and may ask the students' opinions about their teachers.

Blended (hybrid) learning

Growth in the use of online and technology-based resources in physical schools is proliferating across the country, changing the way educators think about traditional instructional models and increasing the ability for teachers to apply individualized instruction in an effective and meaningful way. Maryland has established MTTS (Maryland Teacher Technology Standards[33]) to instruct all teachers in what they need to know and be able to do related to the use of technology in their classroom practice. The integration of online curriculum in the physical classroom is referred to as blended learning, or sometimes hybrid learning.

Blended learning means many things to many people, even within the online learning community. It is referred to as both blended and hybrid learning, with little or no difference in the meaning of the terms among most educators. In general terms, blended learning combines online delivery of educational content with the best features of classroom interaction and live instruction to personalize learning, allow thoughtful reflection, and differentiate instruction from student to student across a diverse group of learners.

The blending of instruction may be at the course level, combining both online and non-online instruction within one subject. The blending may be at the institutional level, for example online schools gathering their students on a regular, scheduled basis, with the teacher physically present or remaining at a distance. Finally, some students are taking one or more fully online courses and

[32] Information in this section, and all quotes in this section, are based on *Essential Principles of Online Teaching: Guidelines for evaluating K-12 online teachers,* Southern Regional Education Board, April 2003, http://info.sreb.org/programs/EdTech/pubs/PDF/Essential_Principles.pdf and International Association for K-12 Online Learning, *National Standards of Quality for Online Courses*, http://www.inacol.org/research/nationalstandards/.

[33] Maryland Teacher Technology Standards, retrieved October 29, 2010 http://marylandpublicschools.org/MSDE/programs/technology/techstds/?WBCMODE=P%25%25%3E%25%3E

attending a traditional classroom for one or more face-to-face courses, another type of blended model. This last approach applies to most of the state virtual school supplemental online programs such as Michigan Virtual School, Virtual Virginia and the Maryland Virtual School, as well as some Maryland and national district programs, and some consortium programs such as the Massachusetts-based Virtual High School Global Consortium.

Student support and the role of the local School System Coordinator

A key challenge for online programs is providing effective support to their students. Support needs include both technical (i.e., issues of accessing the course, problems with computers or software, etc.) and academic (issues with the course content, tutoring and counseling).

Separate from technical support is the assistance provided by the local school system coordinator in each school that has one or more students taking an online course. Typically school system coordinators are teachers, but they do not have to teach in the same subject area as the course that the student is taking. In Maryland, the school system coordinator works with Maryland Virtual School to:

- Provide information to students, parents/guardians, and staff regarding MVS offerings;
- Serve as a liaison with the principal;
- Work with guidance staff to ensure a match between the students' needs and the use of online courses;
- Review the student progress reports;
- Ensure that the proper grade and credit information for the online course are recorded in the student's record;
- Work with local technical staff to ensure that all MVS students have access to and assistance in using necessary equipment and software; and
- Provide MVS feedback on the quality of the courses and instruction and student satisfaction.[34]

Other critical pieces of the school support structure include mentors, counselors and the school principal. The school mentor works directly with the student to provide encouragement and weekly monitoring. Key responsibilities of the mentor include checking weekly with the student to gauge progress; acting as liaison between the online instructor, parent, and student; checking the course statistics weekly; reviewing the online course calendar and assignments; and proctoring face-to-face exams. Depending on the size of the school and the district, one staff may fill multiple roles and these roles may be focused at the school or district level.[35]

Ensuring quality of online courses and schools

Early experience with online learning sometimes revealed inconsistent course quality, lack of teacher expertise in a new format, and issues involved in student and technology support. Most online programs have established procedures, professional development standards, enhanced technology and

[34] *School-based Roles*, MVS web site, Practices and Procedures manual, retrieved October 25, 2010, http://mdk12online.org/docs/MVSPracticesProcedures.pdf

[35] Ibid

instituted curriculum development, and evaluation policies that ensure a high-quality experience for online learners.

There are two broad ways to determine quality in an online course or school; these methods mirror the ways in which quality is determined in physical schools. The first method is through course and program inputs, which are made up primarily of content, teachers, and additional program elements such as student support. Up until relatively recently, standards for these elements were not specific to online learning. The only review of online content was based on state content standards, and the main metric for evaluating teaching was student-teacher ratio. In recent years, the International Association for K-12 Online Learning (iNACOL) has published standards for online course content, online teaching, and online programs. These standards are specific to online programs and are far more comprehensive than the previous, limited input measures. The remaining challenge is how to create widespread usage of the online standards, and also how to create reporting so that programs' adherence to the standards can be evaluated.

The second method for determining course and program quality is via program outcomes including student mastery of the content, course completion and passing rates, and performance of students on state achievement tests, particularly compared to their own previous performance. This last point, comparing students against their own previous performance instead of against state averages, is particularly important because some online programs are focused on low-performing or at-risk students. Test scores for these programs will tend to be lower than state averages even if they have significantly increased achievement of students in their schools. Outcomes are based on a combination of factors including course content, quality of instruction, student support, and other variables.

Continuity of learning[36]

Continuity of learning has become an important area of interest for state education agencies and school districts around the country. Virtual schools are emerging as an important component for providing continuity of learning during school closures due to disease or natural disasters. State and district virtual schools can provide courses, teachers, technology infrastructure and expertise, and procedures designed to enroll and administer students free of physical constraints. iNACOL has identified some solutions for schools to provide continuity of learning during pandemics, such as the recent concerns over H1N1 flu strain, and natural disasters.

Virtual schools, online learning and distance learning have provided education to students at any location for more than 20 years. Using examples and models from virtual schooling and distance education can provide a short-term solution and a long-term framework for options related to the continuity of learning for school closures. Most virtual schools work with school districts and state education agencies to meet the learning needs of schools and students in their states across the K-12 grade level continuum. Other online resources, curriculum, supplemental services and technology providers work with virtual schools and districts in a number of ways that might be able to bolster partnerships for creative solutions.

[36] This section on *Continuity of Learning*, is reprinted by permission of iNACOL. Additional details on continuity of learning can be found at http://www.inacol.org/col/, retrieved October 21, 2010.